

Mathematical Girls - Fermat's Last Theorem

C04

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第 4 話

Chapter 4



She got it
Aurora.

She is
second year
high school
student like
Mitsuko-san, or
no? but she's in a
different class.

DRAG

WELL THEN
I'LL BE
BORROWING
HER.

CLOSE TO
WENT ON PAR
WITH ME, THE
LEADER OF
FORTUNES-
[SAD J]

!

!



Send me there, please, I wish.
Am I that interesting among people? I hope so."

There is still a lot more to do.
I will not let anything happen.
I will be the one who will protect you.

Let's go to the hospital. I'll be there. I'll be there for you.
I'll be there for you. I'll be there for you.
I'll be there for you. I'll be there for you.

I will be there for you. I will be there for you.
I will be there for you. I will be there for you.
I will be there for you. I will be there for you.
I will be there for you. I will be there for you.

CO is an old member.

He looking at the girl. I'm sorry. I'm sorry.
I'm sorry. I'm sorry. I'm sorry. I'm sorry.

I'M
SORRY

...GEN-
PA.

BUT THIS
WAY OF
SOLVING IS
AMAZING...

I'm sorry. I'm sorry.
I'm sorry. I'm sorry.
I'm sorry. I'm sorry.



IT'S NOT
LIKE IDEAS
COME
QUICKLY TO
MY MIND
EITHER.

NO.
NO.



TOO
AMAZING
FOR ME
TO REFER
TO...

OR
PER-
HAPS



SULK

IF IT
WAS
ME,

AN IDEA LIKE
THAT WOULD
NEVER COME
TO MY MIND
SO QUICKLY.



SQUAWK

SQUAWK

WHEN
THINKING OF
A PROBLEM
IT'S

EXACTLY
LIKE WANDERING
AROUND IN
THE MIDDLE
OF A
FOREST.

ALL
RIGHT

POKE
OUT

WELL
THEN,

LET'S TRY
TO THINK
TOGETHER
ABOUT THE
TRUE
NATURE OF
TODAY'S
PROBLEM

"TO BE AN
INTEGER"

THIS
CONDITION
IS REALLY
POWER-
FUL.



IS THAT THE
NUMBERS ARE
DRAWN FROM
THE INTEGERS
AND NOT THE
REAL NUM-
BERS.

THE SPECIAL
CHARACTER-
ISTIC OF THE
PRIMITIVE
PYTHAGOR-
EAN TRIPLEG



THE
VALUES OF
INTEGERS
ARE DIS-
CRETE.

THESE
VALUES OCCUR AT
INTER-
VALS.

BUT
INTEGERS
ARE
DIFFERENT



IF THEY WERE
REAL NUMBERS,
THE VALUES
WOULD GO ON
SMOOTHLY AND
CONTINUOUSLY



EVEN

ODD

"CHECKING
PARITY" IS AN
EFFECTIVE
POLICY WHEN
THINKING ABOUT
INTEGERS.



INTEGERS
DO HAVE
PARITY.

REAL
NUMBERS
DON'T
HAVE
PARITY.



OR EVEN
NUMBER $\times$
INTEGER =
EVEN
NUMBER.

Odd number $\times$ odd number = odd number
Even number $\times$ integer = even number

AND THERE
ARE USEFUL
EQUATIONS
LIKE: ODD
NUMBER $\times$ ODD
NUMBER =
EVEN NUMBER

WHEN WE
HAVE AN
EQUATION
SUCH THAT:
INTEGER =
INTEGER.

THE PARTY
IS THE
SAME FOR
BOTH
SIDES.

BY DECOMPOSING
AN INTEGER INTO
ITS PRIME
FACTORS, ITS
STRUCTURE
IS EXPOSED.

ONE MORE
USEFUL THING
IS THAT
"FROM ITS
PRIME
FACTORS, THE
STRUCTURE OF
AN INTEGER IS
KNOWN."

THAT'S
WHAT
WE'RE
GOING
TO USE.

"THEN THE
DECOMPOSITION
INTO PRIME
FACTORS OF THE
LEFT HAND SIDE
WILL COMPLETELY
COINCIDE WITH
THE DECOMPO-
SITION INTO PRIME
FACTORS OF THE
RIGHT HAND
SIDE."

AND SINCE THE
DECOMPOSITION
INTO PRIME FAC-
TORS IS UNIQUE,
SUPPOSE WE HAVE
AN EQUATION:
INTEGER = INTEGER.



WE APPLY
"PRODUCT
FORM".

HOW DO
WE USE
THAT?

A NUMBER
MAKING UP
PART OF A
PRODUCT IS
CALLED A
FACTOR.

FOR
EXAMPLE,
WHEN WE
WERE
TALKING
ABOUT,

WE HAD A
PRODUCT
CALLED AC.

I WONDER
IF YOU
UNDERSTAND
THAT.

A SINGLE
PRIME NUMBER
CAN'T BE
DIVIDED INTO
TWO FACTORS.

IN THIS
CASE A
AND C ARE
FACTORS.

UUM
...







BY DOING
SO, WE
CONTINUE
CLEARING
OUR PATH
AS WE GO.



WE MANAGED
TO EARN AN
IMPORTANT
TRUMP CARD,
WHICH IS "THE
CORPUS OF EACH
PRIME FACTOR
CANNOT BE
SPLIT UP."



AND EVENTUALLY,
WE MIGHT BE
ABLE TO SEE
THE EXIT OF
THE FOREST...







MAKE INTO
THE FORM OF
A PRODUCT.
MAKE COMPARIS
BY DIVIDING BY
THE HIGHEST
COMMON
MULTIPLE.

CHECK PURITY,
DO PRIME
FACTOR
SECOND-
STION.

THE
TECHNIQUE
WE USE
WHEN WE
HAVE
INTGERS
IS



IT SEEMS THAT
INTRODUCING
VARIABLES ONLY
MAKES IT MORE
DIFFICULT...

I SEE.



THIS IS
JUST A HINT
ABOUT THE
ROUTE TO
TAKE WHEN
THINKING.

BECAUSE
THERE ARE
ALSO TIMES
WHEN YOU
GO THE
WRONG
WAY.

YES.



BUT IT'S NOT
LIKE THINGS
WILL ALWAYS
WORK OUT
WELL IF WE
DO THAT.







—TO
SENPAI.

THANK
YOU
VERY
MUCH

I
WANT
TO
SAY

AND THAT IS
THE UNIQUE
ATMOSPHERE
THAT
SURROUNDING
PROBLEMS
ABOUT
"INTEGERS".

I THOUGHT
ABOUT IT SO
EARNESTLY...

THE
QUESTION:
"ARE THERE
INFINITELY
MANY
PRIMITIVE
PYTHAG-
OREAN
TRIPLES?"



THERE IS
SOMETHING
THAT I'VE
LEARNED AFTER
LISTENING TO
WHAT SENPAI
HAS SAID.

BUT
TODAY,





WHenever I
listen to
Senpai's
talking,

I learn
"something"
that's
different
from lessons
or books.



It's some-
thing that
nobody is
supposed to ...

Despite the
topic being
something
that I'm
supposed to
know
very well,



settled all
sorts of
things claiming
that "I knew".

I've

GO FAR,



...BUT,

It might
have really
been that I
"thought
I knew"...



BECAUSE
NEMO IS HERE,
I DON'T GET
DISCOURAGED.

BUT—

I KNEW
IT VERY
WELL.



THE FACT
THAT I DON'T
REALLY
UNDERSTAND
INTEGERS...



BUT, I FEEL
THAT ONE
DAY I WILL
BE ABLE TO
GET OUT.

RIGHT NOW,
I'M LOST IN
THE MIDDLE
OF A FOREST



I'M NOT
REALLY
TALKING
ABOUT
MATHS...



...DUN

THIS IS
ABOUT
MATHS,
BUT,





IT'S THE
END OF THE
SCHOOL DAY.





Checking parity

The special characteristic of integers is that they are "discrete". Discrete means that they take "values present at intervals" $\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

When thinking about a problem about integers, it's very important to think about "even" or "odd". Being even means being divisible by 2 without a remainder, in other words $\dots, -4, -2, 0, 2, 4, \dots$

And, being odd means not being divisible by 2 without a remainder; in other words $\dots, -5, -3, -1, 1, 3, 5, \dots$

Checking whether an integer is even or odd is called "checking parity".

Adding an odd number and an odd number will certainly give an even number. And multiplying an even number by an integer will certainly give an even number. Moreover, when we have an equality of integers on both sides, if the left-hand side is an even number, then the right-hand side will also be an even number, and when the left-hand side is an odd number, the right-hand side will also be an odd number.

There are many occasions when something as obvious as "checking parity" can become the impetus for solving a problem.



数学ガール

Math Girl's Girl's Love Story

フェルマーの最終定理